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## MYXOMYCETES FROM SOUTH AMERICA

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Our knowledge of the Myxomycetes of South America is comparatively meager. Spegazzini's numerous articles upon the fungi of Argentina, Brazil, Uruguay, and Paraguay<sup>1</sup> contain references to Myxomycetes and describe a number of new species, several of which, however, appear, on closer examination, to be referable to already known forms. R. E. Fries<sup>2</sup> has listed 47 species from Argentina and Bolivia. From Brazil, Berkeley and Curtis,<sup>3</sup> Hennings,<sup>4</sup> Jahn,<sup>5</sup> von Höhnelt,<sup>6</sup> and Sydow<sup>7</sup> have published brief lists. Johow<sup>8</sup> mentions a few species belonging to this group in his Flora of Juan Fernandez, Chile. Ecuador is represented by a small number included by Patouillard and Lagerheim in their "Champignons de l'Équateur,"<sup>9</sup> while the former observer, in collaboration with Gaillard, reports 11 species of Myxomycetes in his "Champignons du Vénézuéla."<sup>10</sup> Although practically all parts of South America are represented in the publications of the above observers, the number of actual species of Myxomycetes listed is surprisingly small. It is therefore gratifying to be able to add materially to our knowledge in this field.

The following species were collected by Professor Roland Thaxter in Argentina and Chile in 1905-06. The collection is deposited in the Cryptogamic Herbarium of Harvard University, and it is through the courtesy of Professor Thaxter and Dr. W.

<sup>1</sup> Anal. Soc. Cient. Argentina, 1881, 1886, 1888; Bol. Acad. Nac. Ciencias, 1887, 1889; Rev. Facul. Agr. y Vet., 1896; Anal. Mus. Nac. Buenos Aires, 1899, 1909.

<sup>2</sup> Arkiv. f. Botanik, 1906.

<sup>3</sup> Journ. Linn. Soc., Botany, 1877.

<sup>4</sup> Hedwigia, 1896. Idem, Beiblatt, 1902.

<sup>5</sup> Ber. Deutsch. Bot. Gesellsch., 1902; Hedwigia, 1904.

<sup>6</sup> Denkschr. K. Akad. Wiss. Wien, 1907.

<sup>7</sup> Ann. Mycol., 1907.

<sup>8</sup> Estud. sobre la Flora d. l. Islas de Juan Fernandez, 1896.

<sup>9</sup> Bull. Soc. Myc. France, 1893.

<sup>10</sup> Bull. Soc. Myc. France, 1888.

G. Farlow that I have had the privilege of examining it and of reporting the results. It will be noted that, although the list includes several interesting species, it has happily been unnecessary to record any new species.

*CERATIOMYXA FRUTICULOSA* (Muell.) Macbr. Punta Arenas, Chile, March, 1906.

*CERATIOMYXA FRUTICULOSA* (var. *FLEXUOSA* List.). Corral, Chile, December, 1905. This extremely delicate form is interesting, but seems hardly worthy of even the varietal rank given it in the Lister Monograph.

*BADHAMIA PANICEA* (Fr.) Rost. Buenos Aires, Argentina, December, 1905. A somewhat scanty specimen, but fairly characteristic.

*PHYSARUM GLOBULIFERUM* (Bull.) Pers. Corral, Chile, December, 1905.

*PHYSARUM DICTYOSPERMUM* List. Punta Arenas, Chile, February, 1906. It is interesting to find this apparently very rare species in Chile. The only other recorded gatherings are from New Zealand, Switzerland and Australia. The specimen from Punta Arenas agrees in every particular with the description and figures furnished by Miss Lister, except that the slender, black stalks are somewhat longer (0.7 mm.) and the black columella is clavate and attains a height of one-half to two-thirds that of the sporangium. The specimen consists of about twenty sporangia growing on a mass of decayed vegetable matter.

*PHYSARUM VIRIDE* (Bull.) Pers. Concepcion, Chile, November, 1905; Corral, Chile, December, 1905.

*PHYSARUM POLYCEPHALUM* Schw. Temperley, Argentina, April, 1906. This is the typical form, with undulate, yellow sporangia, borne in clusters on fasciculate stalks.

*PHYSARUM PENETRALE* Rex. Corral, Chile, December, 1905. A fine gathering, which extends considerably the known range of this species in the southern hemisphere.

*PHYSARUM BRUNNEOLUM* (Phill.) Mass. Punta Arenas, Chile, March, 1906. An extraordinarily robust form of this species, occurring in fair abundance on decayed wood. The dirty-white or pale-tawny sporangia are borne on stout or slender reddish-

brown stalks, and measure 1.3 to 1.8 mm. in diameter. The thick, somewhat cartilaginous wall is densely charged with lime, and splits open in an irregular manner.

*PHYSARUM STRAMINIPES* List. Punta Arenas, Chile, February, 1906.

*PHYSARUM DIDERMOIDES* (Ach.) Rost. Buenos Aires, Argentina, April, 1906.

*PHYSARUM NUTANS* (Bull.) Pers. Corral, Chile, November and December, 1905.

*PHYSARUM LATERITIUM* (Berk. & Rav.) Morg. Corral, Chile, December, 1905. This specimen shows dark, orange-red lime-knots, instead of the yellow knots with red centers usually seen in this species. But the character of both capillitium and spores is that of *P. lateritium* rather than of *P. rubiginosum*, to which otherwise the specimen shows a very close resemblance. It is very doubtful whether these two forms can be regarded as distinct species.

*FULIGO SEPTICA* (Linn.) Gmel. Corral, Chile, December, 1905. Punta Arenas, Chile, February, 1906.

*PHYSARELLA OBLONGA* (Berk. & Curt.) Morg. Palermo Park, Buenos Aires, Argentina, March, 1906.

*LEOCARPUS FRAGILIS* (Dicks.) Rost. Punta Arenas, Chile, February, 1906.

*DIDERMA HEMISPHERICUM* (Bull.) Horn. Buenos Aires, Argentina, April, 1906.

*DIDERMA SPUMARIOIDES* Fr. Punta Arenas, Chile, February, 1906.

*DIDERMA NIVEUM* (Rost.) Macbr., subsp. *LYALLII* (Mass.). List. Punta Arenas, Chile, February and March, 1906. These gatherings are scanty and in rather poor condition, but the material is sufficient to warrant its reference as above. In both cases the whitish, densely calcareous sporangia are provided with stout, concolorous stalks, and show whitish, more or less clavate columellae.

*DIDERMA TESTACEUM* (Schrad.) Pers.? Punta Arenas, Chile, March, 1906. A single gathering, consisting of a few crowded, pulvinate sporangia, none of which are mature, is doubtfully referred to this species.

*DIDERMA SIMPLEX* (Schroet.) List. Punta Arenas, Chile, February, 1906. This is a single very large gathering consisting of thousands of closely crowded, sessile sporangia of a pale ochraceous-brown or tawny color, almost completely covering a mixed substratum of moss, dead leaves and twigs. A specimen submitted to Miss Lister was determined by her as above.

*DIDERMA TREVELYANI* (Grev.) Fr. Punta Arenas, Chile, February, 1906. As compared with numerous gatherings of this species made in the United States, this Chilean specimen shows a remarkable divergence in the size of the sporangia. These measure 1.5 mm. or more in diameter. In other respects, however, they are thoroughly characteristic of the species.

*DIDERMA ANTARCTICA* (Speg.) Sturgis. Punta Arenas, Chile, January, 1906. In 1887 Spegazzini<sup>11</sup> described as "*ad truncos cariosus Fagi antarcticae in silvis prope Punta Arenas*," a species to which he gave the name *Licea antarctica*. This species, Miss Lister (Mon. Mycet., p. 264) refers doubtfully to *Perichaena corticalis* Rost. I have not seen the type of Spegazzini's species, but the published description makes it quite evident that it does not refer to a species of *Licea*, since it includes a distinct capillitium. The gathering made by Professor Thaxter and here recorded, consists of groups of ten to fifty or more closely aggregated, sessile sporangia, subglobose or angled by mutual pressure and with smooth walls of a dark reddish brown color. The thick wall, brittle above, persistent and cartilaginous below, is closely lined throughout with a delicate membranous layer densely beset with minute, snow-white granules of lime. The columella is a rough, indeterminate, calcareous mass of a pale yellow color. The capillitium consists normally of scanty, coarse or slender threads, dark in the middle, hyaline at the extremities; occasionally of large, pale-brown, membranous, angular expansions, from which the threads radiate. The spores, black in the mass, are dark purplish-brown, paler on one side, minutely spinulose and often marked with one or more raised bands, and measure 10.5–11.5  $\mu$  in diameter. That this description coincides very closely with that of *Licea antarctica* there can be no doubt. The probability that the two gatherings represent one and the same species is

<sup>11</sup> Fungi Patagonici. In Bol. Acad. Nac. Ciencias, Cordoba, 11: 56.

emphasized by the fact that both occurred on *Fagus antarctica*, and in precisely the same narrowly limited locality.<sup>12</sup> The specimen under consideration belongs in the *Leangium* group of the genus *Diderma*, and I feel justified in uniting with it the form recorded by Dr. Spegazzini.

DIACHAEA LEUCOPODA (Bull.) Rost. Buenos Aires, Argentina, October, 1905.

DIACHAEA LEUCOPODA var. GLOBOSA List. Punta Arenas, Chile, February, 1906. A remarkably fine gathering of this rare form, showing both stipitate and sessile sporangia.

DIDYMIUM CLAVUS (Alb. & Schw.) Rost. Llavallol, Argentina, April, 1906.

DIDYMIUM MELANOSPERMUM (Pers.) Macbr. Buenos Aires, Argentina, March, 1906.

STEMONITIS FUSCA Roth. Corral, Chile, December, 1905; Punta Arenas, Chile, February, 1906; Buenos Aires, Argentina, March, 1906.

STEMONITIS FUSCA var. DICTYOSPORA (Rost.). A fine gathering of this variety, showing an imperfect surface net and spores marked by raised bands forming a complete reticulation and a distinct border. In the size and habit of the sporangia this specimen is precisely like normal *S. fusca*. The absence of a surface net, and the spore-sculpture, however, connect it with Rostafinski's *S. dictyospora*. Miss Lister applies to this form the name *S. trechispora*. This name originated with Berkeley and first appears in connection with a specimen collected in Venezuela by Fendler. A portion of this gathering is in the Curtis Herbarium at Harvard University and bears the label "*Stemonitis trechispora*, B. & C." Under his *S. dictyospora*, Rostafinski (Mycet. Monog., App., p. 27) quotes three specimens, from Cuba, Ceylon, and Venezuela, respectively. The first-named was presumably the type of the species, but I find no record of the existence of this specimen. The second appears to be properly referable to *S. fusca* var. *rufescens* (cf. Lister, Mon. Mycet., Ed. 2, p. 145). The third is the gathering represented in the Kew, British Museum, and Curtis herbaria, and named by Rostafinski *S. dictyospora*. Although this specimen bears the manuscript name *S.*

<sup>12</sup> Professor Thaxter informs me that there is only one wooded area readily accessible from Punta Arenas.

*trechispora*, that name was never published and is discarded by Rostafinski except as a synonym for his *S. dictyospora*. Torrend (Fl. Myx., p. 141) disregards Rostafinski's authority in the matter and reverts to the earlier name, although the latter was evidently a *nomen nudum*. Masee (Mon. Myx., p. 84) rightly accepts the name *S. dictyospora* Rost. for the Venezuela specimen, while deploring the fact that Rostafinski did not see fit to validate the earlier name. It seems to me that Masee's conclusion is the only correct one, though I can not concur with him in giving to these banded-spored specimens anything more than a varietal position.

STEMONITIS SPLENDENS Rost. Punta Arenas, Chile, February, 1906; Palermo, Argentina, March and April, 1906.

STEMONITIS SPLENDENS var. WEBBERI (Rex) List. Punta Arenas, Chile, March, 1906.

STEMONITIS HERBATICA Peck. Palermo, Argentina, March, 1906.

STEMONITIS FERRUGINEA Ehr. Corral, Chile, December, 1905; Punta Arenas, Chile, February, 1906.

COMATRICHA NIGRA (Pers.) Schroet. Punta Arenas, Chile, February and March, 1906.

COMATRICHA TYPHOIDES (Bull.) Rost. Corral, Chile, December, 1905; Palermo, Argentina, March, 1906.

COMATRICHA TYPHOIDES var. HETEROSPORA Rex. Punta Arenas, Chile, March, 1906. A number of gatherings of this form show the same date and locality. In most of them the sporangia are of the usual narrowly cylindrical shape; some, however, exhibit tufts of rather dark sporangia, almost sessile, and measuring only 1.5 mm. in height by over 1 mm. in diameter. In these latter specimens the spores have a faintly reticulated surface, but the characteristic, scattered warts are barely, if at all, apparent. Such specimens evidently approach the dwarf forms of *Stemonitis fusca*.

ENERTHENEMA PAPILLATUM (Pers.) Rost. Punta Arenas, Chile, February, 1906.

CLASTODERMA DEBARYANUM Blytt. Corral, Chile, December, 1905. This rare species is represented by a single very large gathering in fine condition. It is typical in every respect.

CRIBRARIA MACROCARPA Schrad. Punta Arenas, Chile, March, 1906. A scanty gathering in poor condition.

CRIBRARIA SPLENDENS (Schrad.) Pers. Punta Arenas, Chile, February, 1906.

CRIBRARIA PYRIFORMIS Schrad. Punta Arenas, Chile, March, 1906.

DICTYDIUM CANCELLATUM (Batsch) Macbr. Punta Arenas, Chile, March, 1906. The single gathering of this common species included in this collection is a remarkable one. The sixty or more sporangia all show a very delicate, persistent, membranous wall, imparting to the sporangia a certain degree of iridescence. In most cases the wall is not thickened below to form a cup, but in others the cup is one-third to one-half the height of the sporangium and, in such cases, is marked with a network composed of lines of plasmodic granules, which network is continued in the upper part of the sporangium precisely as in the genus *Cribraria*. In fact, such sporangia present a remarkable resemblance to *C. pyriformis*. When the cup is absent, its place is taken by strong ribs, occasionally connected by delicate cross threads as in typical *Dictydium*, but usually anastomosing at acute angles below and forming a typical *Cribraria* net above, either with or without slightly thickened nodes. Such sporangia show a very near approach to *Cribraria splendens*. Only here and there in the gathering is to be found a sporangium the structure of which is throughout that of normal *Dictydium*.

TUBIFERA FERRUGINOSA (Batsch) Gmel. Punta Arenas, Chile, March, 1906.

DICTYDIAETHALIUM PLUMBEUM (Schum.) Rost. Corral, Chile, December, 1905. This is the gathering referred to by Miss Lister (Mon. Mycet., p. 196). The specimen is badly weathered, being detached entirely from the substratum, and showing only the persistent apices and characteristic lateral portions of the sporangia. The latter are peculiar in being unusually coarse (8–10  $\mu$  diam.); their length indicates that the aethalium measured 1.5 mm. or more in thickness; otherwise the specimen appears to be quite normal.

RETICULARIA LYCOPERDON Bull. Corral, Chile, December, 1905; Punta Arenas, Chile, 1906.



LYCOGALA FLAVO-FUSCUM (Ehr.) Rost. Llavallol, Argentina, April, 1906.

LYCOGALA EPIDENDRUM (Linn.) Fr. Corral, Chile, December, 1905; Punta Arenas, Chile, February, 1906.

TRICHIA FAVOGINEA (Batsch) Pers. Punta Arenas, Chile, February, 1905.

TRICHIA VERRUCOSA Berk. Corral, Chile, December, 1905; Punta Arenas, Chile, February, 1906.

TRICHIA AFFINIS D. By. Corral, Chile, December, 1905.

TRICHIA PERSIMILIS Karst. Concepcion, Chile, November, 1905.

TRICHIA DECIPIENS (Pers.) Macbr. Punta Arenas, Chile, February and March, 1906. These specimens vary considerably in general appearance from that usually presented. The sporangia are yellowish clay-colored, in some cases almost or quite sessile, and the upper half of the wall breaks away in an even line, leaving the lower portion as a well-defined cup. These crowded, nearly sessile sporangia bear a peculiar resemblance to those of *Cribraria argillacea*.

TRICHIA BOTRYTIS Pers. Corral, Chile, December, 1905; Punta Arenas, Chile, February, 1906.

TRICHIA BOTRYTIS var. MUNDA List. Corral, Chile, December, 1905.

HEMITRICHIA CLAVATA (Pers.) Rost. Corral, Chile, December, 1905.

ARCYRIA CINEREA (Bull.) Pers. Llavallol, Argentina, April, 1906.

ARCYRIA DENUDATA (Linn.) Sheldon. Corral, Chile, December, 1905.

ARCYRIA INSIGNIS Kalchbr. & Cke. Llavallol, Argentina, March, 1906. This specimen lacks the characteristic color, being weathered to a dull-yellowish-brown. In other respects it is typical.

ARCYRIA INCARNATA Pers. Concepcion, Chile, November, 1905; Punta Arenas, Chile, March, 1906.

MARGARITA METALLICA (Berk. & Br.) List. Punta Arenas, Chile, March, 1906.